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Storms, Jr. et al.

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(54) **CONFIGURABLE JUMP PACK**

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(21) Appl. No.: **14/841,228**

(22) Filed: **Aug. 31, 2015**

Related U.S. Application Data

(63) Continuation of application No. 12/931,133, filed on Jan. 25, 2011, now Pat. No. 9,120,575.

(60) Provisional application No. 61/336,689, filed on Jan. 25, 2010.

(51) **Int. Cl.**
B64D 17/40 (2006.01)

(52) **U.S. Cl.**
CPC ***B64D 17/40*** (2013.01)

(58) **Field of Classification Search**
CPC B64D 17/30; B64D 17/38; B64D 17/40; B64D 17/52; B64D 2700/625; B64D 2700/62543
USPC ..... 224/627, 661; 244/147, 148, 151 B, 244/151 R; 182/3, 6
See application file for complete search history.

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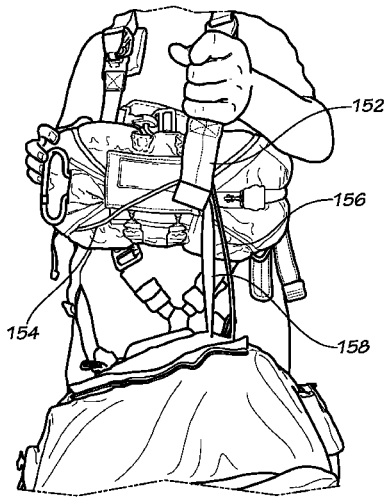
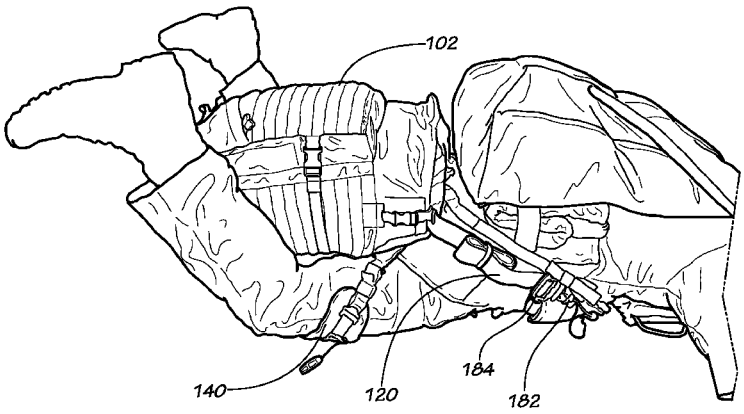
(74) *Attorney, Agent, or Firm* — Shaddock Law Group, PC

(57) **ABSTRACT**

A jumpable pack having interacting harness attachment loops and connection loops; a pair of release loops secured directly to said pack, such that each release loop interacts directly with a corresponding connection loop, wherein each release loop is at least partially disposed within a corresponding connection loop, and wherein said corresponding one of said connection loops is at least partially disposed within a corresponding harness attachment loop; a drop line attachment loop secured directly to a portion of said pack; a pair of first straps releasably secured to a portion of said pack; a pair of second straps secured to a side portion of said pack; a pair of second strap attachment segments, wherein each second strap attachment segment is releasably attached or coupled to each second strap; and a single point release assembly that includes a release line attached to a handle portion.

20 Claims, 15 Drawing Sheets





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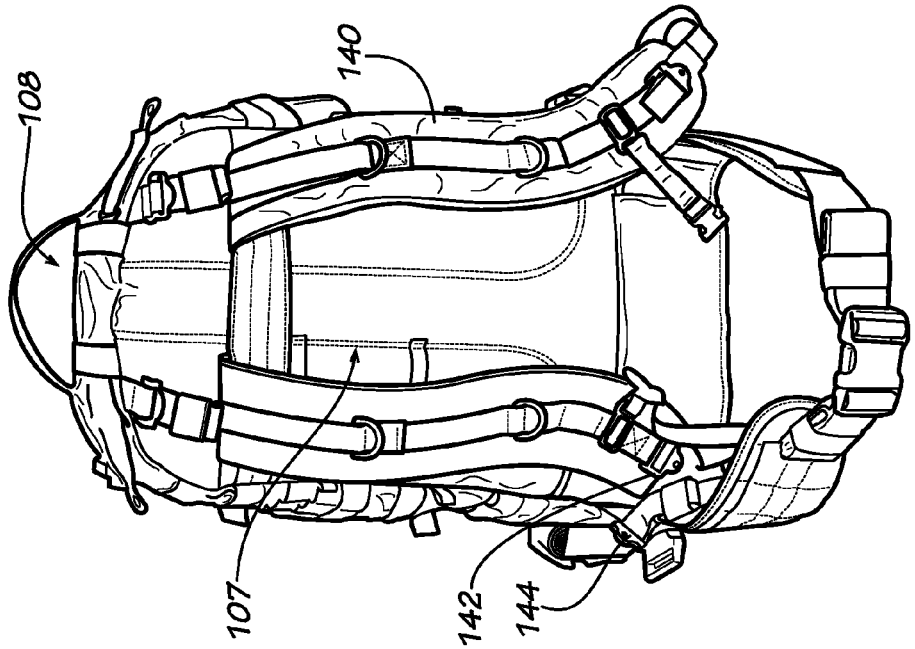


FIG. 2

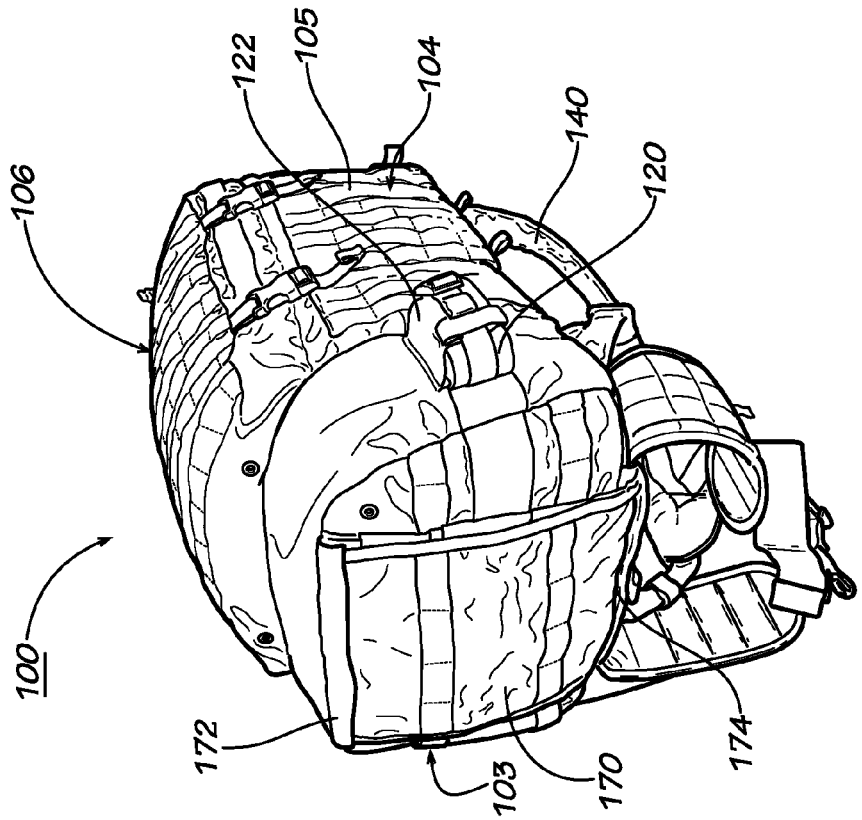


FIG. 1

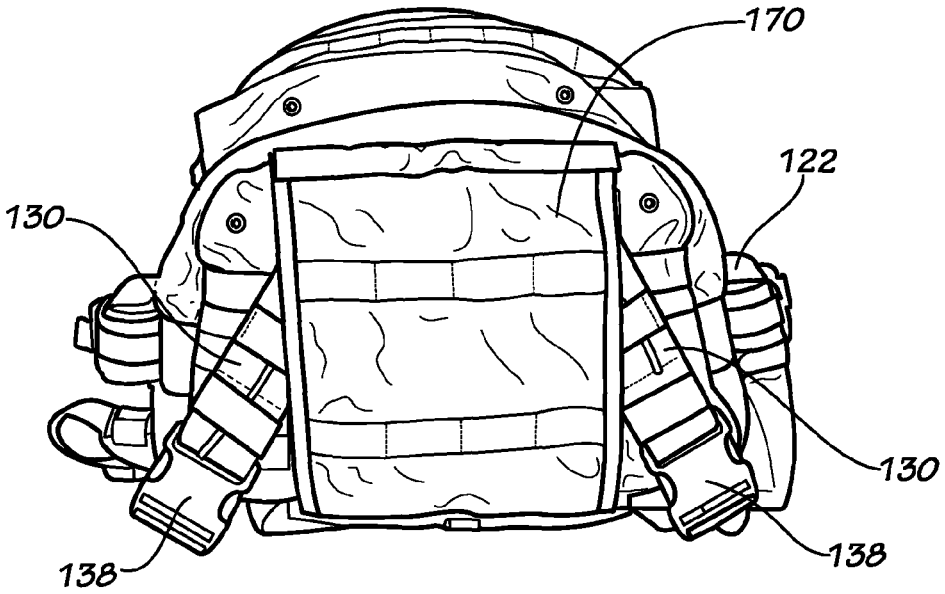


FIG. 3

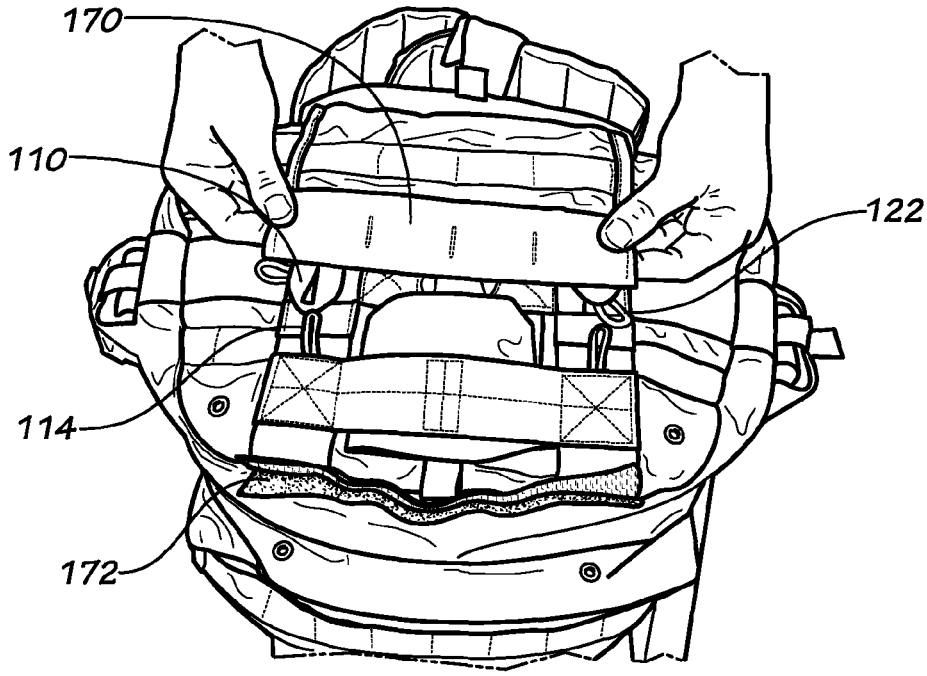


FIG. 4

FIG. 5

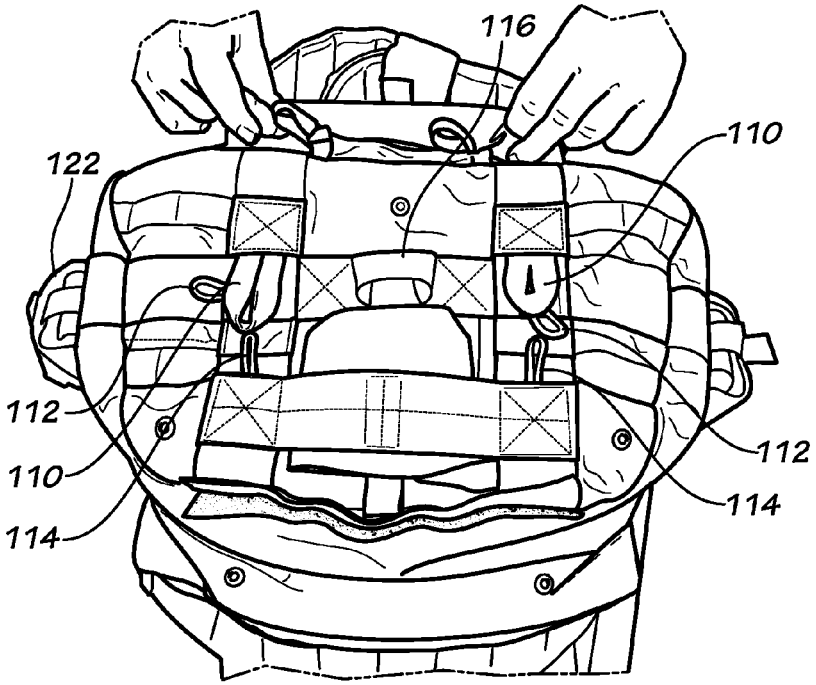
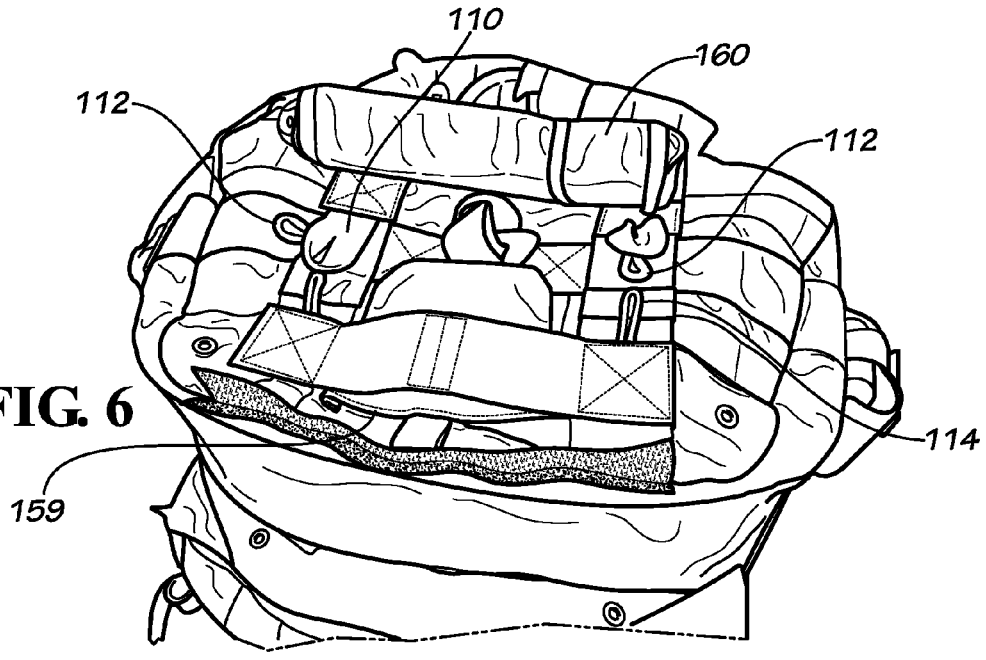


FIG. 6



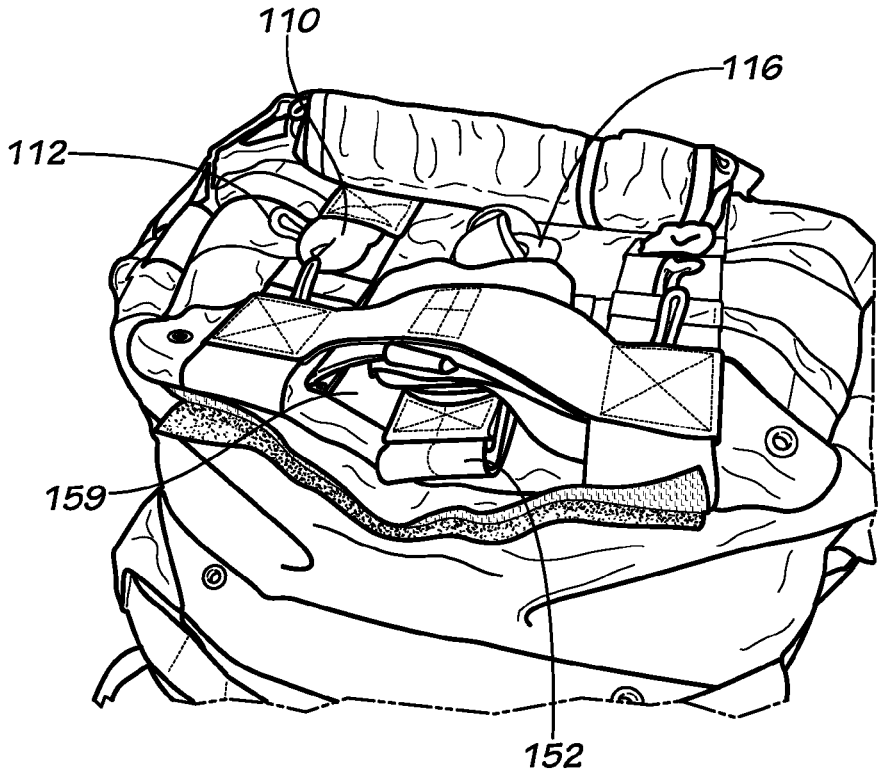


FIG. 7

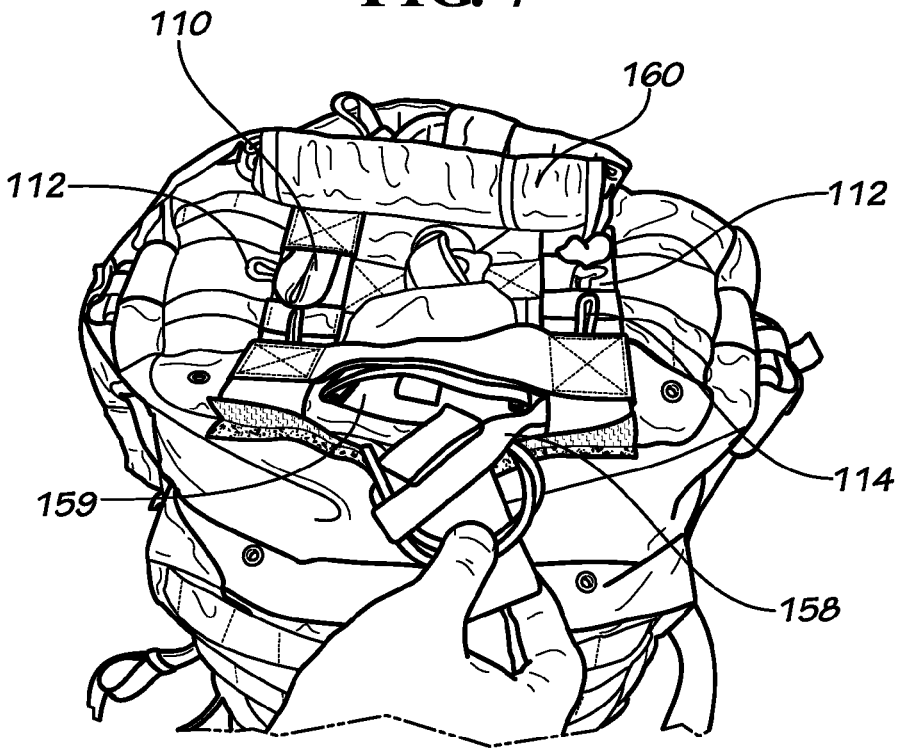


FIG. 8

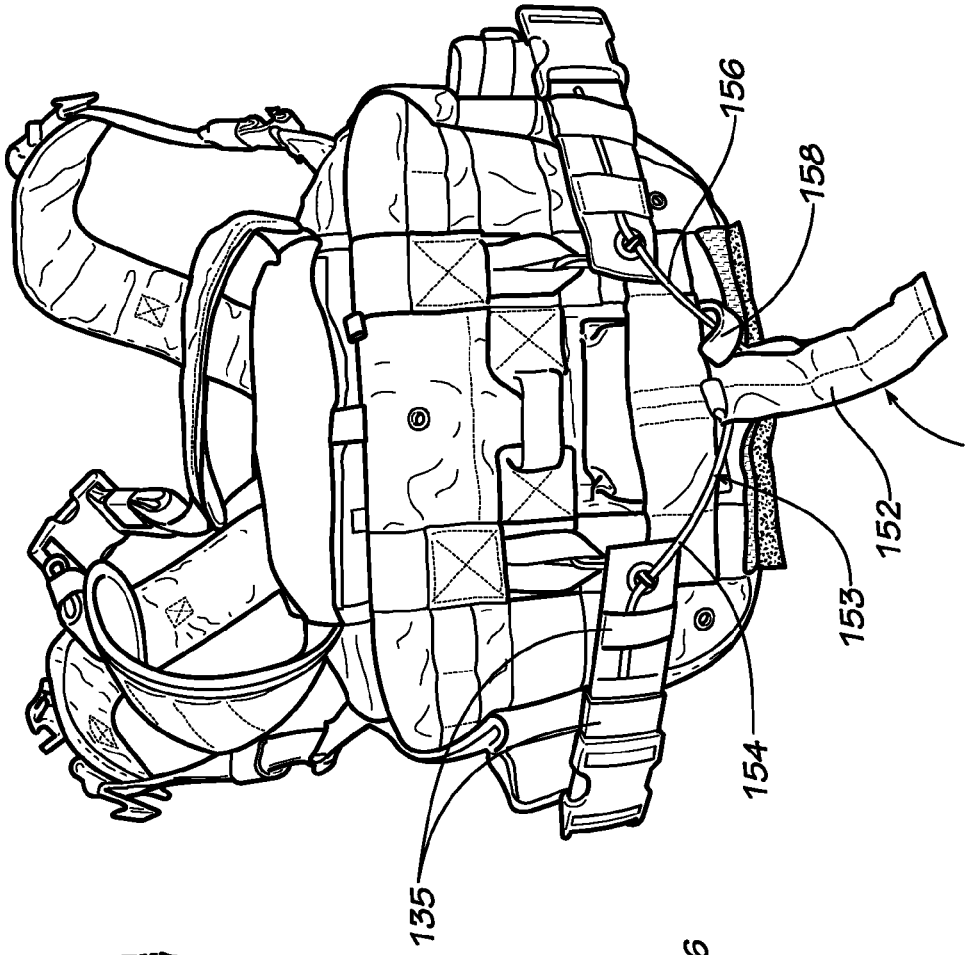


FIG. 10

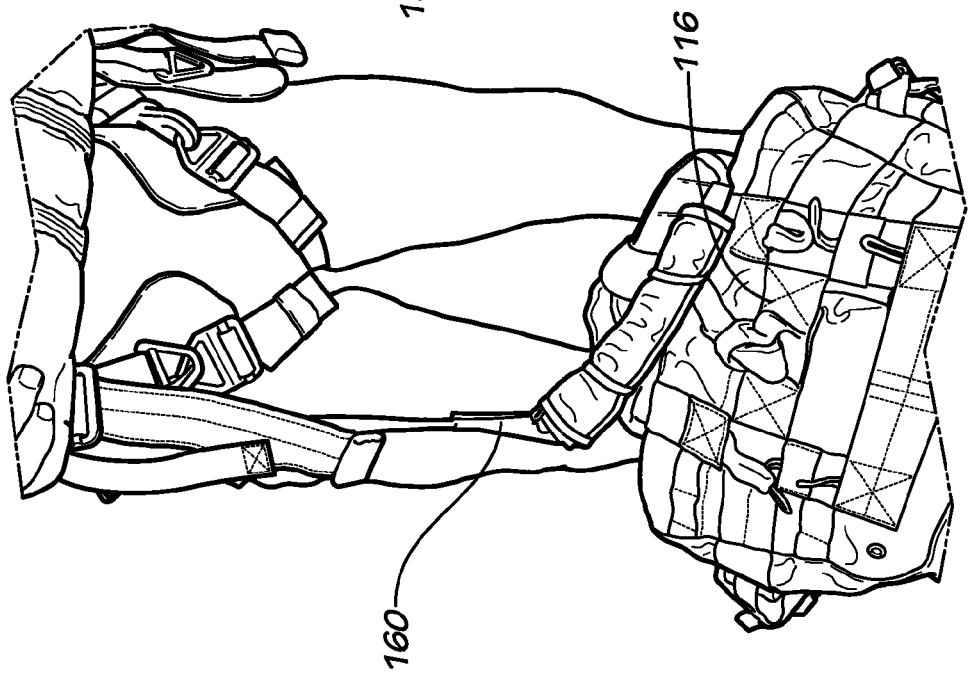


FIG. 9

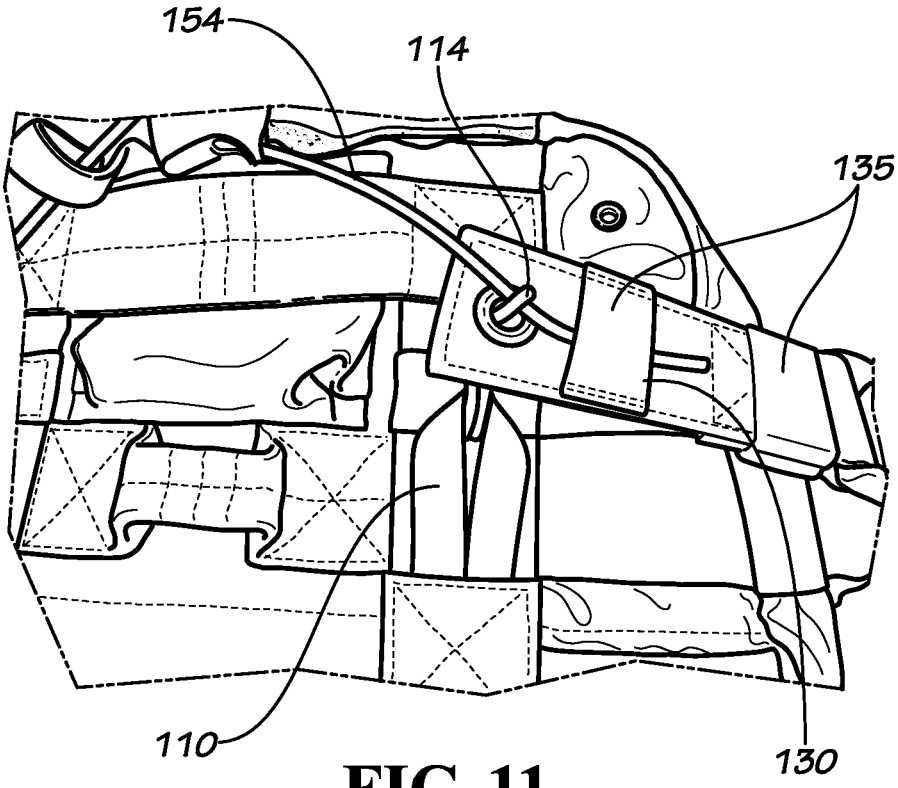


FIG. 11

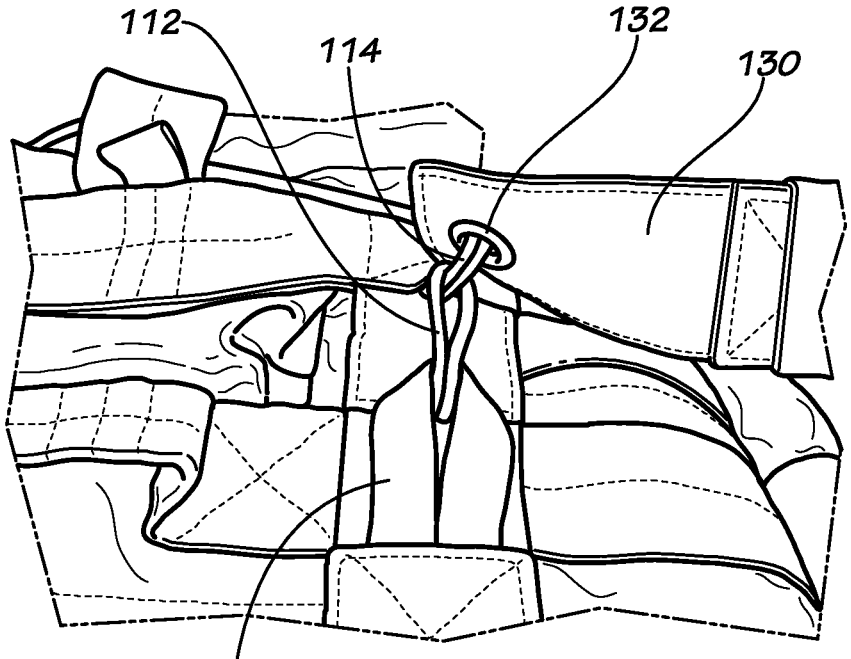


FIG. 12

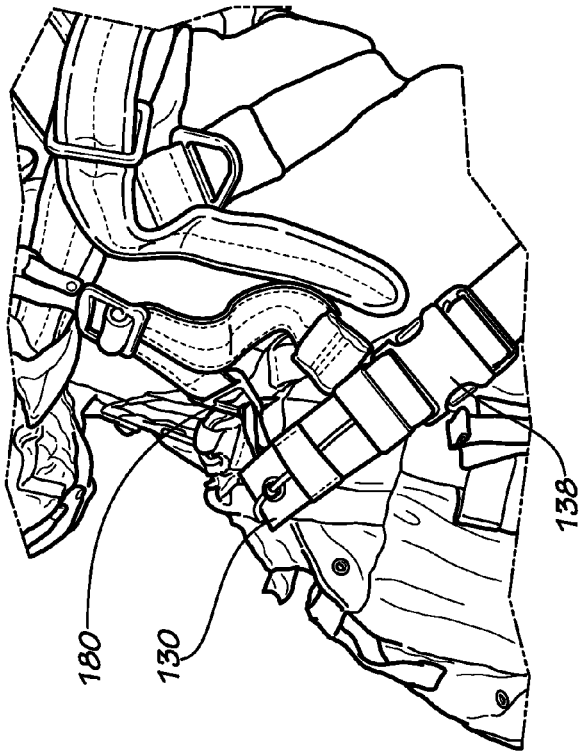


FIG. 14

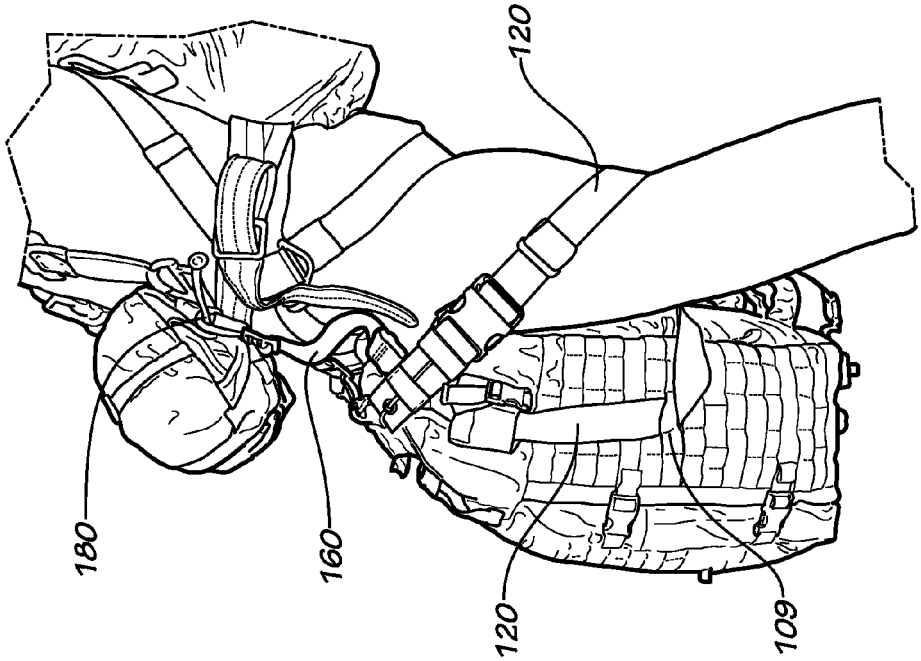


FIG. 13

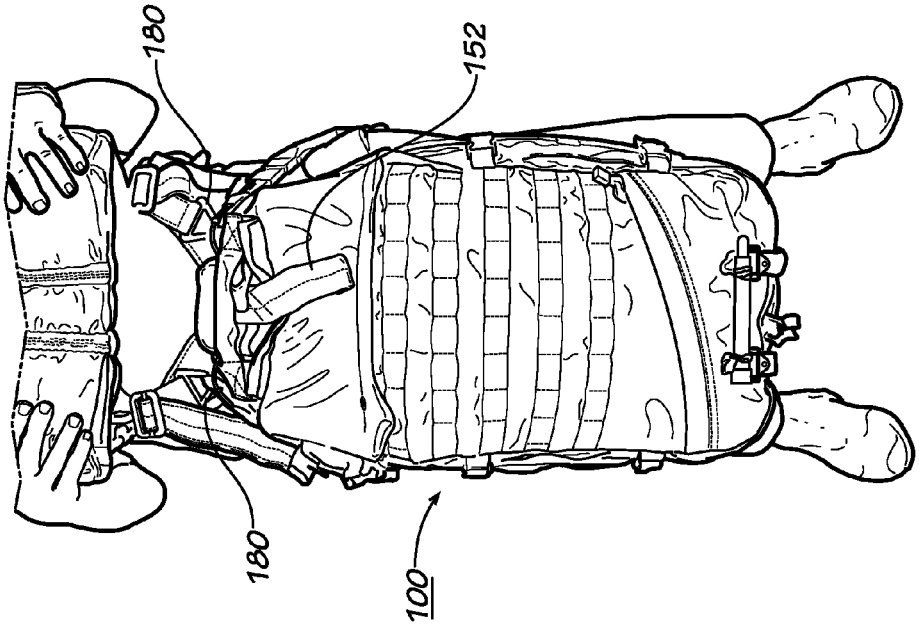


FIG. 16

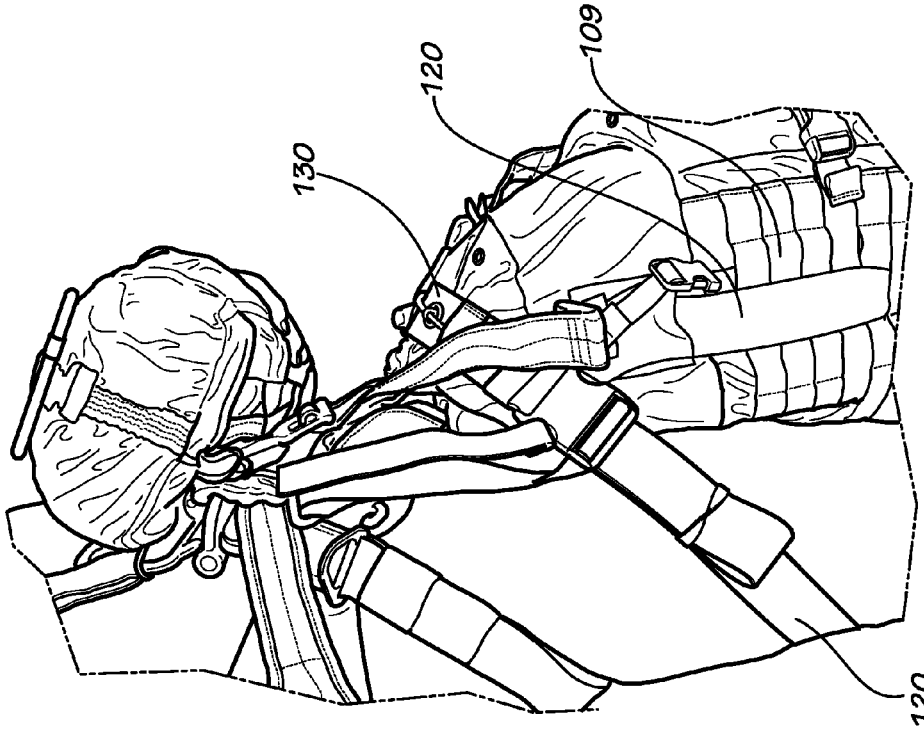


FIG. 15

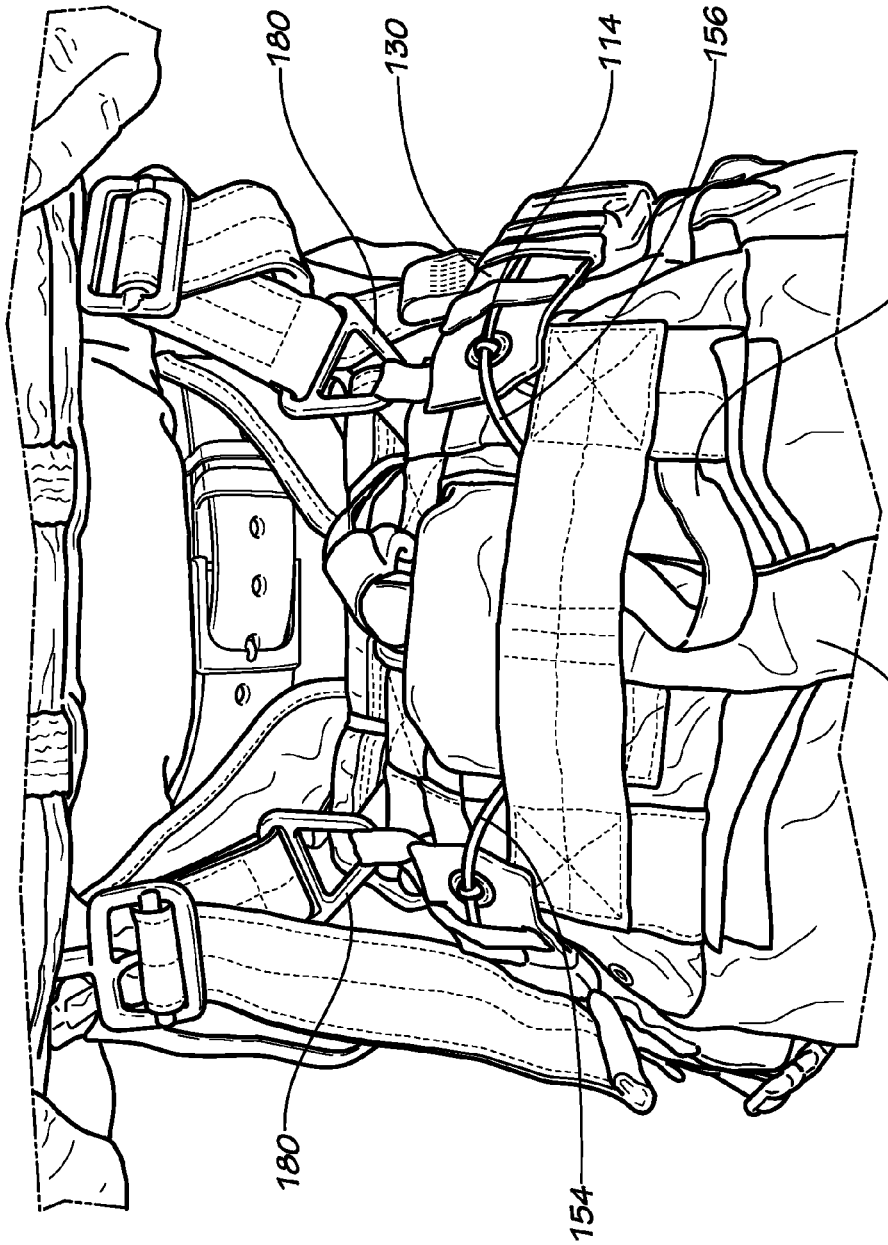


FIG. 17

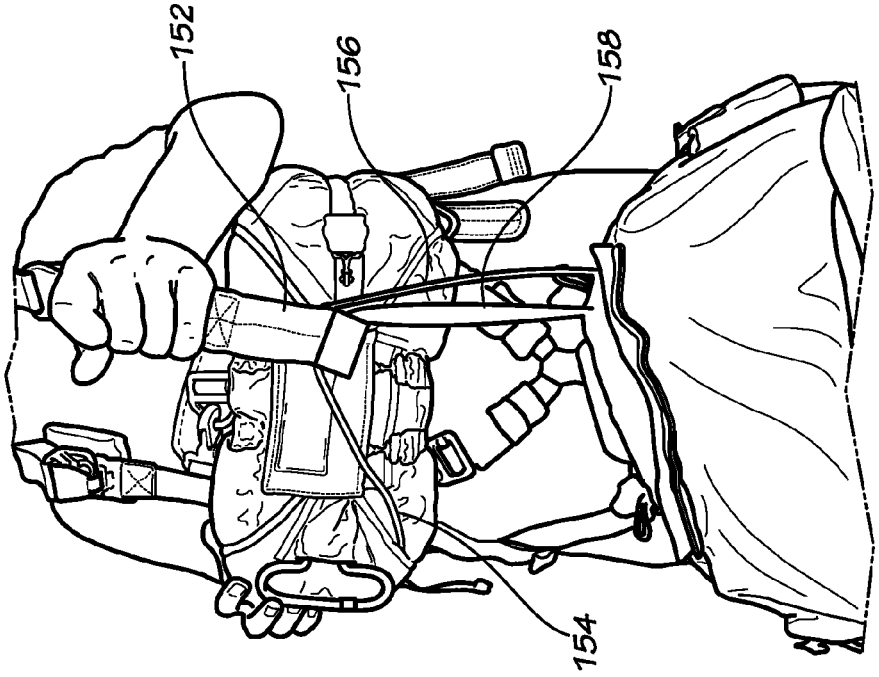


FIG. 19

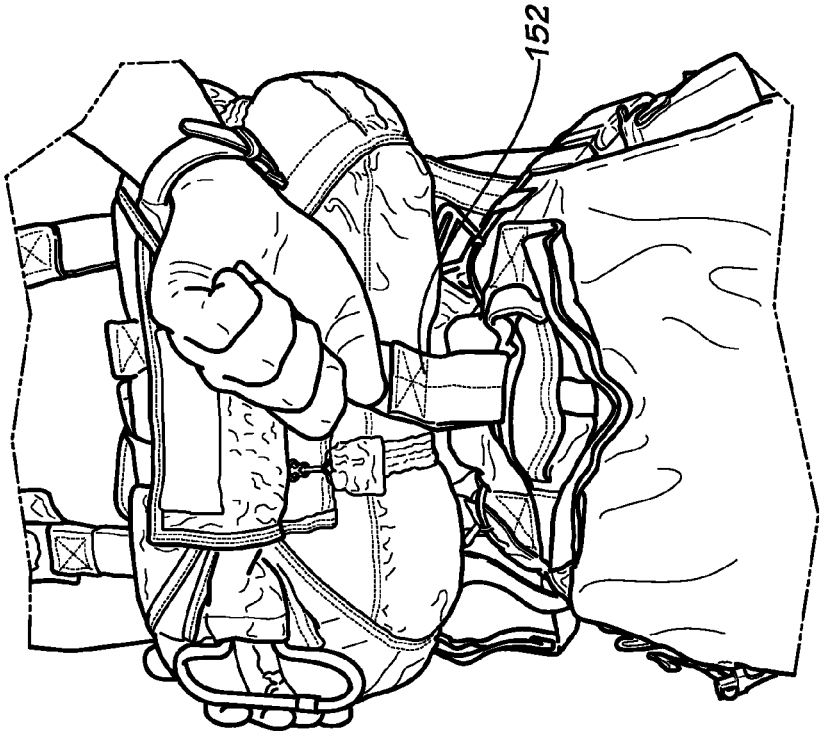


FIG. 18

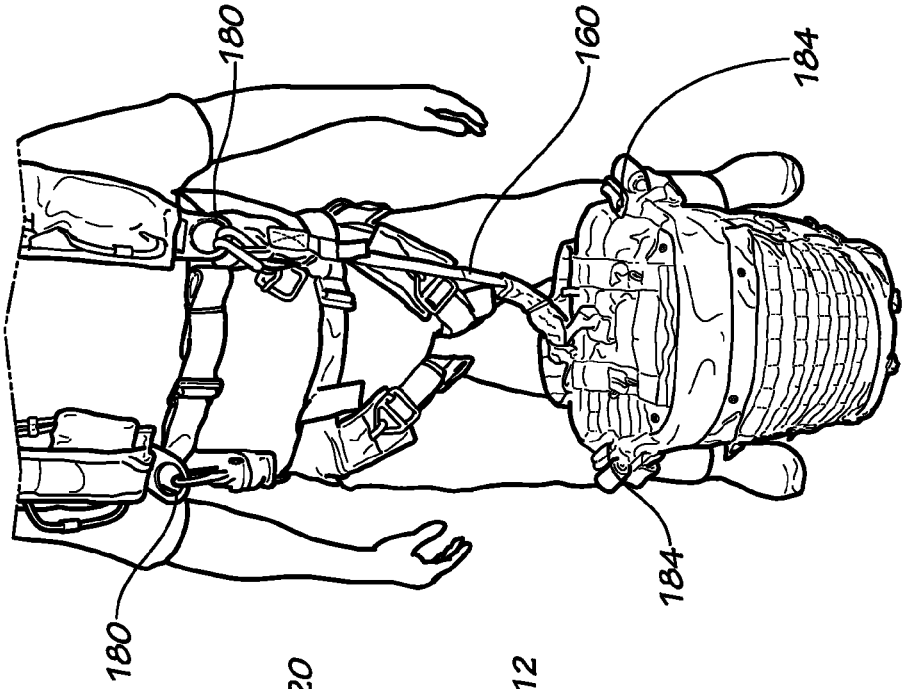


FIG. 21

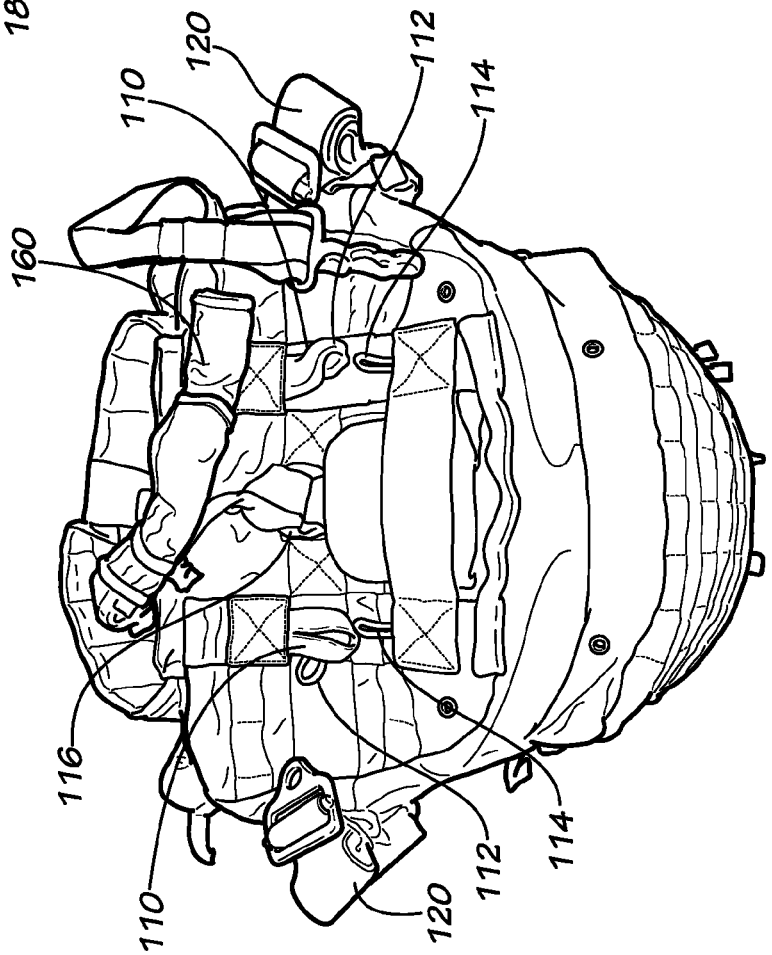


FIG. 20

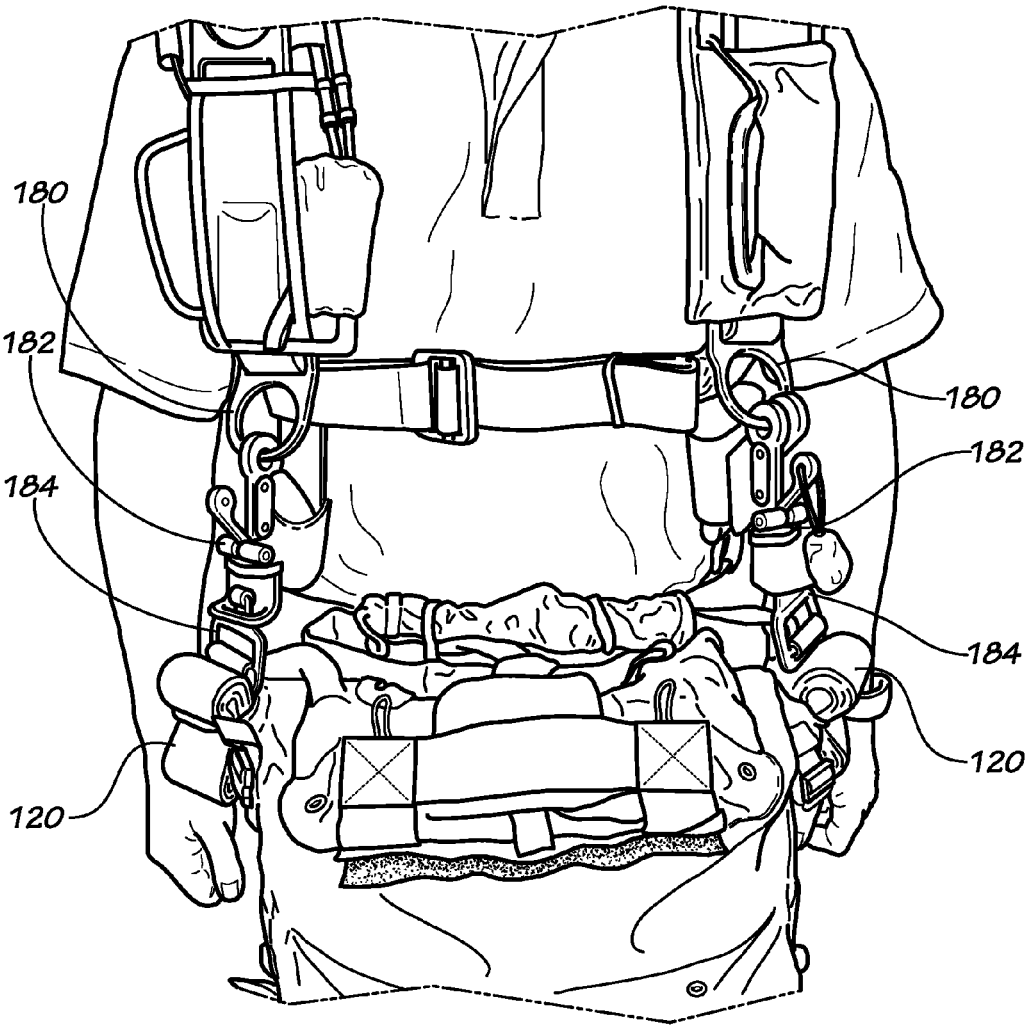


FIG. 22

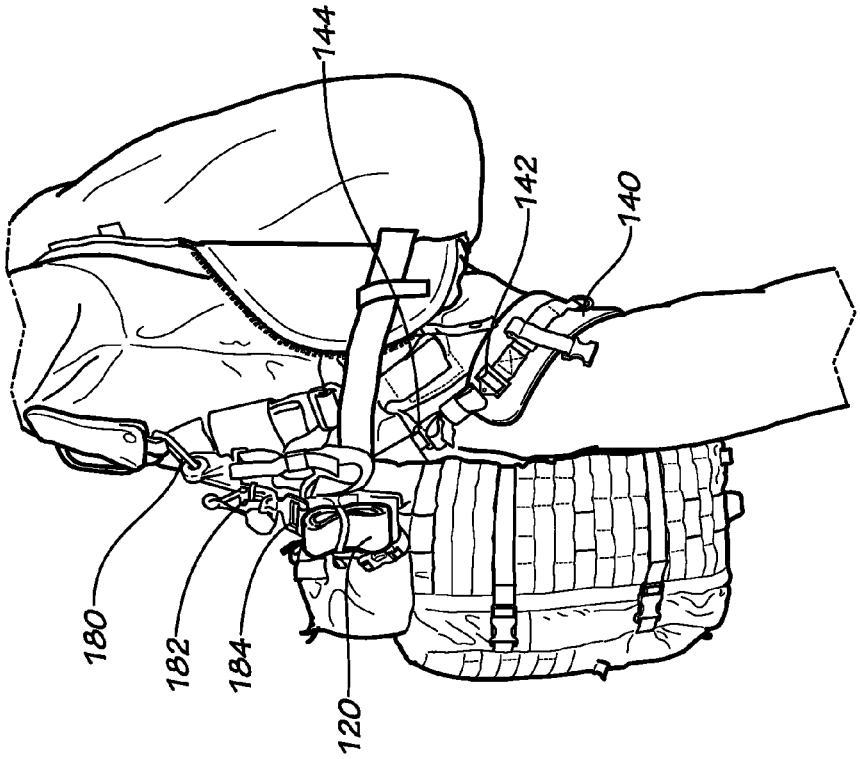


FIG. 24

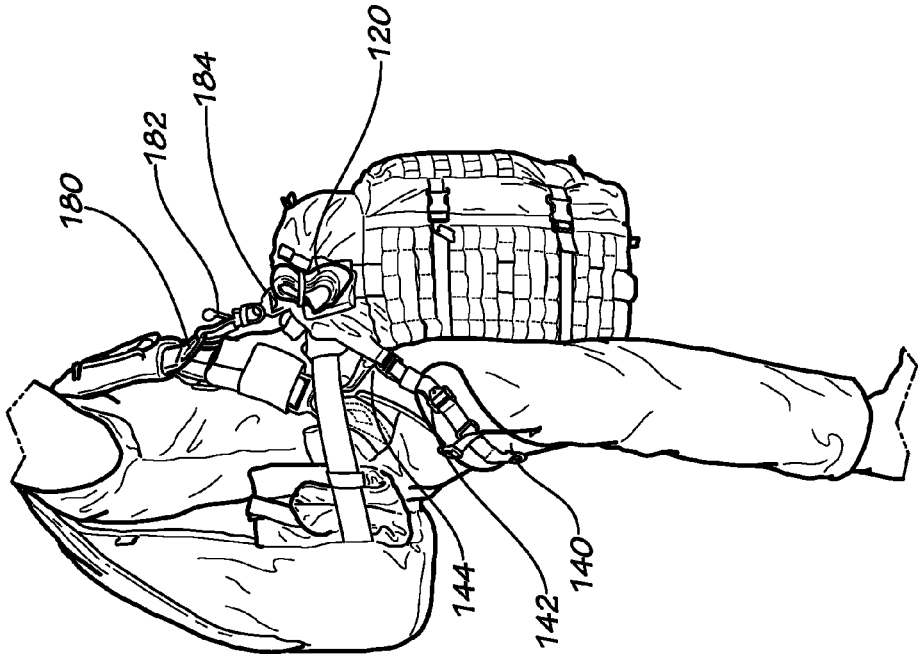


FIG. 23

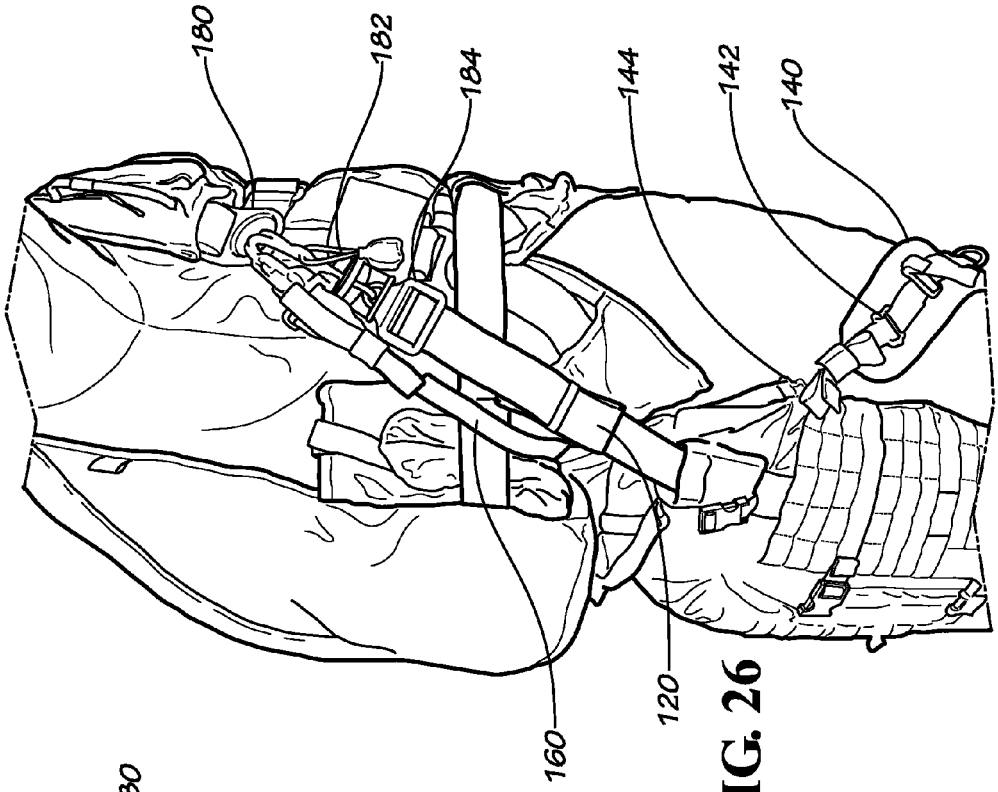


FIG. 26

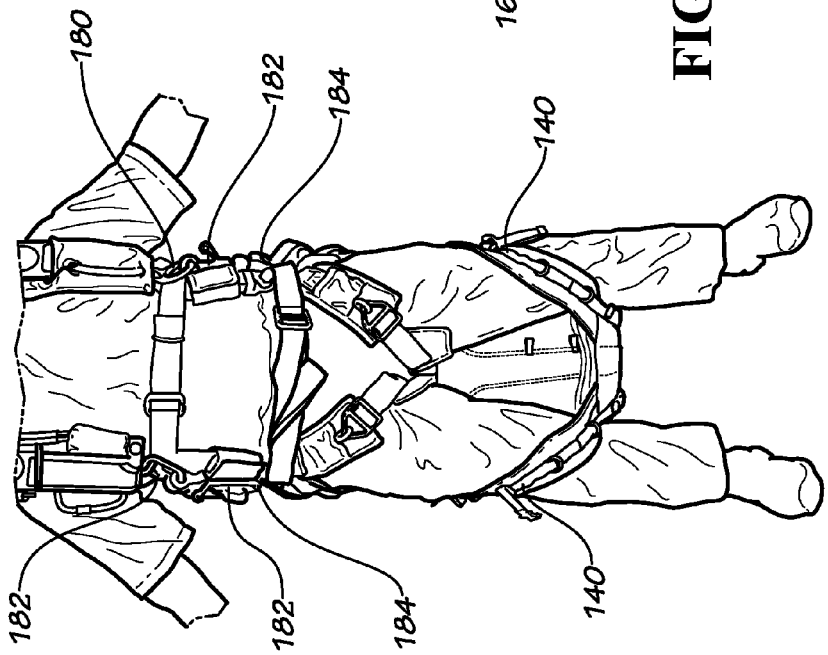


FIG. 25

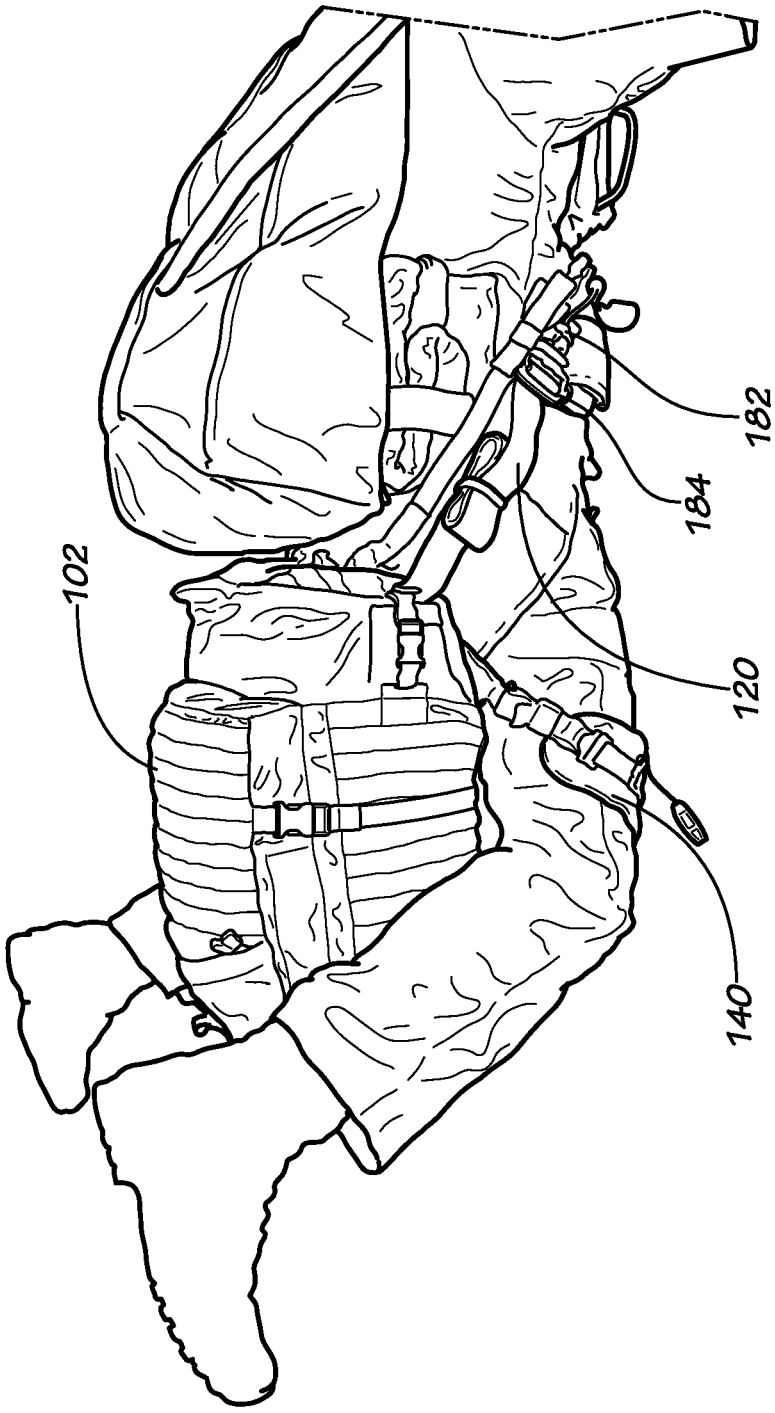


FIG. 27

CONFIGURABLE JUMP PACK

CROSS-REFERENCE TO RELATED APPLICATIONS

This patent application is a Continuation of U.S. patent application Ser. No. 12/931,133, filed Jan. 25, 2011, now U.S. Pat. No. 9,120,575, which claims the benefit of U.S. Patent Application Ser. No. 61/336,689, filed Jan. 25, 2010, the entire disclosure of which is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX

Not Applicable.

NOTICE OF COPYRIGHTED MATERIAL

BACKGROUND OF THE INVENTION

1. Field of the Invention

This disclosure relates generally to jumpable packs or jump packs. In particular, the present disclosure relates to a jumpable pack that can be used in a number of jump configurations.

2. Description of Related Art

There are basically two methods used in parachuting from an aircraft, a static line method and a freefall method. When performing a static line jump, the parachutist attaches a static line to a transport aircraft and, when the parachutist jumps from the plane, the static line will deploy the parachutist's main canopy. In freefall jumping, the parachutist jumps from the transport aircraft and free falls for a period of time, before opening his or her parachute.

Particularly in military applications, parachutists' jump with a load-out of gear and equipment stowed in a jump bag.

Known jump bags are jump-type specific and jump bags designed to be used in static line jumps are different from jump bags designed to be used in freefall jumps.

Any discussion of documents, acts, materials, devices, articles, or the like, which has been included in the present specification is not to be taken as an admission that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present disclosure as it existed before the priority date of each claim of this application.

BRIEF SUMMARY OF EXEMPLARY EMBODIMENTS OF THE INVENTION

The present invention relates generally to jumpable packs or jump packs. In particular, the present invention relates to a jumpable pack that can be used in a number of jump configurations and can be used in both static line and freefall jump applications.

In an illustrative, non-limiting embodiment of this invention, the jump pack comprises a pack having a reinforced quick-release attachment system that allows the jump pack can be utilized in either static line are freefall jump applications.

The quick-release attachment system utilizes specifically positioned harness attachment loops, connection loops, release loops, a drop line attachment loop, shoulder straps, leg straps, leg strap guides, leg strap attachment segments, and a single point release assembly.

In a static line application, the jump pack's harness attachment loops, connection loops, release loops, drop line attachment loop, leg straps, leg strap guides, leg strap attachment segments, and single point release assembly portions of the quick-release attachment system are used to attach the jump pack to the parachutist or the parachute harness.

In a freefall application, the jump pack's harness attachment loops, connection loops, release loops, drop line attachment loop, shoulder straps, leg straps, leg strap guides, leg strap attachment segments, and single point release assembly portions of the quick-release attachment system are used to attach the jump pack to the parachutist or the parachute harness.

Accordingly, this invention provides a jump pack having a multifunction quick-release attachment system.

This invention separately provides a quick-release jump pack.

This invention separately provides a jump pack having a quick-release attachment system, which is capable of being used in static line jumps.

This invention separately provides a jump pack having a quick-release attachment system, which is capable of being used in freefall jumps.

These and other aspects, features, and advantages of the presently disclosed systems, methods, and/or apparatuses are described in or are apparent from the following detailed description of the exemplary, non-limiting embodiments of the presently disclosed systems, methods, and/or apparatuses and the accompanying figures. Other aspects and features of embodiments of the presently disclosed systems, methods, and/or apparatuses will become apparent to those of ordinary skill in the art upon reviewing the following description of specific, exemplary embodiments of the presently disclosed systems, methods, and/or apparatuses in concert with the figures. While features of the presently disclosed systems, methods, and/or apparatuses may be discussed relative to certain embodiments and figures, all embodiments of the presently disclosed systems, methods, and/or apparatuses can include one or more of the features discussed herein.

Further, while one or more embodiments may be discussed as having certain advantageous features, one or more of such features may also be used with the various embodiments of the systems, methods, and/or apparatuses discussed herein. In similar fashion, while exemplary embodiments may be discussed below as device, system, or method embodiments, it is to be understood that such exemplary embodiments can be implemented in various devices, systems, and methods of the presently disclosed systems, methods, and/or apparatuses.

Any benefits, advantages, or solutions to problems that are described herein with regard to specific embodiments are not intended to be construed as a critical, required, or essential

feature(s) or element(s) of the presently disclosed systems, methods, and/or apparatuses or the claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

As required, detailed exemplary embodiments of the presently disclosed systems, methods, and/or apparatuses are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the presently disclosed systems, methods, and/or apparatuses that may be embodied in various and alternative forms, within the scope of the presently disclosed systems, methods, and/or apparatuses. The figures are not necessarily to scale; some features may be exaggerated or minimized to illustrate details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the presently disclosed systems, methods, and/or apparatuses.

The exemplary embodiments of the presently disclosed systems, methods, and/or apparatuses will be described in detail, with reference to the following figures, wherein like reference numerals refer to like parts throughout the several views, and wherein:

FIG. **1** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack according to this invention;

FIG. **2** generally shows a back view of a first exemplary embodiment of a jump pack according to this invention;

FIG. **3** generally shows a bottom view of a first exemplary embodiment of a jump pack according to this invention;

FIG. **4** generally shows a bottom view of a first exemplary embodiment of a jump pack according to this invention, where in the flap is partially withdrawn;

FIG. **5** generally shows a bottom view of a first exemplary embodiment of a jump pack according to this invention, where in the flap is withdrawn;

FIG. **6** generally shows a bottom view of a first exemplary embodiment of a jump pack according to this invention, where in the flap is withdrawn and a drop line is attached;

FIG. **7** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack according to this invention, wherein the release assembly is at least partially within the release assembly storage pocket **159**;

FIG. **8** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack according to this invention, wherein the release assembly is at least partially withdrawn from the release assembly storage pocket **159**;

FIG. **9** generally shows a bottom view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, where in the flap is withdrawn and a drop line is attached;

FIG. **10** generally shows a bottom view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, showing the release assembly;

FIG. **11** generally shows a more detailed bottom view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, showing a more detailed view of a portion of the release assembly;

FIG. **12** generally shows a more detailed bottom view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, showing a more detailed view of a portion of the release assembly;

FIG. **13** generally shows a left side view of a first exemplary embodiment of a jump pack wherein the jump pack is attached to a parachutist and a parachute harness in a static line jump configuration according to this invention;

FIG. **14** generally shows a more detailed left side view of a first exemplary embodiment of a jump pack wherein the jump pack is attached to a parachutist and a parachute harness in a static line jump configuration according to this invention;

FIG. **15** generally shows a right side view of a first exemplary embodiment of a jump pack wherein the jump pack is attached to a parachutist and a parachute harness in a static line jump configuration according to this invention;

FIG. **16** generally shows a front view of a first exemplary embodiment of a jump pack wherein the jump pack is attached to a parachute harness in a static line jump configuration according to this invention;

FIG. **17** generally shows a more detailed bottom view of a first exemplary embodiment of a jump pack wherein the jump pack is attached to a parachute harness in a static line jump configuration according to this invention;

FIG. **18** generally shows a more detailed front view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, showing a more detailed view of a portion of the release assembly;

FIG. **19** generally shows a more detailed bottom view of a first exemplary embodiment of a jump pack being used in a static line jump configuration according to this invention, showing the release assembly in a release position;

FIG. **20** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack being used in a first freefall jump configuration according to this invention, where in the flap is withdrawn and a drop line is attached;

FIG. **21** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack being used in a first freefall jump configuration according to this invention, where in the drop line is attached to the parachute harness;

FIG. **22** generally shows a bottom perspective view of a first exemplary embodiment of a jump pack being used in a first freefall jump configuration according to this invention, where in the jump pack is attached to the parachute harness;

FIG. **23** generally shows a right side view of a first exemplary embodiment of a jump pack being used in a first freefall jump configuration according to this invention, where in the jump pack is attached to the parachute harness;

FIG. **24** generally shows a left side view of a first exemplary embodiment of a jump pack being used in a first freefall jump configuration according to this invention, where in the jump pack is attached to the parachute harness;

FIG. **25** generally shows a front view of a first exemplary embodiment of a jump pack being used in a second freefall jump configuration according to this invention, where in the jump pack is attached to a parachutist and the parachute harness;

FIG. **26** generally shows a right side view of a first exemplary embodiment of a jump pack being used in a second freefall jump configuration according to this invention, where in the jump pack is attached to the parachutist and the parachute harness; and

FIG. **27** generally shows a right side perspective view of a first exemplary embodiment of a jump pack being used in a second freefall jump configuration according to this invention, where in the jump pack is attached to the parachutist and the parachute harness.

DETAILED DESCRIPTION OF THE INVENTION

For simplicity and clarification, the design factors and operating principles of the jump pack according to this inven-

tion are explained with reference to various exemplary embodiments of a jump pack according to this invention. The basic explanation of the design factors and operating principles of the jump pack is applicable for the understanding, design, and operation of the jump pack of this invention.

As used herein, the word "may" is meant to convey a permissive sense (i.e., meaning "having the potential to"), rather than a mandatory sense (i.e., meaning "must"). Unless stated otherwise, terms such as "first" and "second" are used to arbitrarily distinguish between the exemplary embodiments and/or elements such terms describe. Thus, these terms are not necessarily intended to indicate temporal or other prioritization of such exemplary embodiments and/or elements.

The term "coupled", as used herein, is defined as connected, although not necessarily directly, and not necessarily mechanically. The terms "a" and "an" are defined as one or more unless stated otherwise.

Throughout this application, the terms "comprise" (and any form of comprise, such as "comprises" and "comprising"), "have" (and any form of have, such as "has" and "having"), "include", (and any form of include, such as "includes" and "including") and "contain" (and any form of contain, such as "contains" and "containing") are used as open-ended linking verbs. It will be understood that these terms are meant to imply the inclusion of a stated element, integer, step, or group of elements, integers, or steps, but not the exclusion of any other element, integer, step, or group of elements, integers, or steps. As a result, a system, method, or apparatus that "comprises", "has", "includes", or "contains" one or more elements possesses those one or more elements but is not limited to possessing only those one or more elements. Similarly, a method or process that "comprises", "has", "includes" or "contains" one or more operations possesses those one or more operations but is not limited to possessing only those one or more operations.

Furthermore, it should be appreciated that, for simplicity and clarification, the embodiments of this invention will be described with reference to the jump pack quick-release attachment system of the present invention being utilized with a particular jump pack. However, it should be appreciated that the operating principles of the jump pack quick-release attachment system of this invention may also be employed on a variety of jump packs, backpacks, pouches, or carriers.

It should also be appreciated that the terms "pack", "jumpable pack", and "jump pack" are used for basic explanation and understanding of the operation of the systems, methods, and apparatuses of this invention. Therefore, the terms "pack", "jumpable pack", and "jump pack" are not to be construed as limiting the systems, methods, and apparatuses of this invention.

Turning now to the drawing figures, FIGS. **1-8** show various views of a first exemplary embodiment of a jump pack **100** and its constituent components according to this invention. As illustrated, the jump pack **100** with quick-release attachment system of the present invention comprises at least some of a pack **102** with a quick release attachment area having at least some of harness attachment loops **110**, connection loops **112**, release loops **114**, a drop line attachment loop **116**, shoulder straps **140**, leg straps **120**, leg strap guides **105**, leg strap attachment segments **130**, and a single point release assembly **150**.

The quick-release attachment system is incorporated as part of a jump pack **100**. It should be understood that the jump pack **100** may comprise any appropriate pack, pouch, carrier, or backpack. Generally, the jump pack **100** comprises a pack **102** having a bottom portion **103**, side portions **104**, a front portion **106**, a back portion **107**, and a top portion **108**. Shoulder straps **140** are secured to the jump pack **100**, such that the shoulder straps **140** are generally located over the back portion **107** of the jump pack **100**. The shoulder straps **140** include an upper adjustment device **142** that allows a user to adjust the length of the shoulder straps **140**. The shoulder straps **140** also include a lower adjustment device **144** that allows a user to adjust the length of the shoulder straps **140**. Generally, the upper adjustment device **142** allow convenient adjustment of the shoulder straps **140** when the jump pack **100** is worn in an upright position and the lower adjustment device **144** allow a convenient adjustment of the shoulder straps **140** when the jump pack **100** is worn upside down.

As shown in the attached FIGS., a matching pair of harness attachment loops **110**, connection loops **112**, and release loops **114** are secured to the jump pack **100**, at spaced apart locations, within a quick release attachment area of the jump pack **100**. As illustrated, the quick release attachment area may be located within the bottom portion **103** of the jump pack **100**. However, it should be appreciated that the quick release attachment area may be located within any convenient area of the jump pack **100**.

A drop line attachment loop **116** is also secured to the quick release attachment area of the jump pack **100**. The drop line attachment loop **116** provides a loop to which a drop line **160** is to be attached.

A leg strap **120** is secured to each side portion **104** of the jump pack **100**. A leg strap pouch **122** is provided for each leg strap **120**, so that when the leg straps **120** are not in use, each leg strap **120** can be secured within a leg strap pouch **122**. In various exemplary embodiments, leg strap guides **105** are provided along each side portion **104** of the jump pack **100**. The leg strap guides **105** comprise portions of webbing material secured at various intervals along the side portion **104** of the jump pack **100**, allow for adjustment of the length and position of the leg straps **120**.

Each of the leg strap attachment segments **130** comprises a segment of material having a leg strap attachment segment coupler **138** at one end. The leg strap attachment segment coupler **138** allows the leg strap attachment segment **130** to be releasably, adjustably attached to a leg strap **120**. An aperture is formed proximate a second end of each leg strap attachment segment **130**. In various exemplary embodiments, the aperture is reinforced by a grommet.

An optional flap **170** is included that can be secured over at least a portion of the quick release attachment area of the jump pack **100**, to cover at least some of the harness attachment loops **110**, connection loops **112**, release loops **114**, and drop line attachment loop **116**. In various exemplary embodiments, a first side of the flap **170** is attached to the jump pack **100** and a second side of the flap **170** is releasably secured, via a flap fastener **172**, to the jump pack **100**. In various exemplary embodiments, a flap fastener **172** comprises a portion of a hook or loop fastener, such as Velcro, that is capable of interacting with a corresponding portion of hook or loop fastener on the flap **170**. It should be appreciated that, in various exemplary embodiments, the flap fastener **172** may comprise other releasable coupling means or releasable fasteners, such as, for example, male/female snap-release buckles, a ziplock fastening device, a zipper, buttons, snaps, or other fastening, closure, or attachment means known by those skilled in the art.

A flap storage pocket **174** may be included in the jump pack **100**, such that the flap **170** can be stored in the flap storage pocket **174**, when not in use.

The single point release assembly **150** (as shown in FIG. **10**) includes a release line **153** attached or coupled to a handle portion **152**. As illustrated, the release line **153** extends from a first release line portion **154** to a second release line portion **156**. In various exemplary embodiments, the release line **153** is a single, continuous release line and the second release line portion **156** is merely an extension of the first release line portion **154**. In other exemplary embodiments, each of the first release line and the second release line are individual release lines attached or coupled to the handle portion **152**.

In various exemplary embodiments, the release assembly is tethered to the jump pack **100**, via a release assembly tether **158**. In this manner, the release assembly cannot be separated from the jump pack **100** and, therefore, cannot be lost.

The release assembly storage pocket **159** may be included in the jump pack **100**, and may be formed atop or in a portion of the quick release attachment area of the jump pack **100**. The release assembly storage pocket **159** is a position size to allow the release assembly to be stored therein, when not in use.

A plurality of additional accessory attachment loops may optionally be secured to various locations of the jump pack **100**. If included, the accessory attachment loops provide a means for attaching various items to the exterior of the jump pack **100**.

It should be appreciated that while the quick-release attachment system of the present invention is described and shown as being incorporated into the quick release attachment area within the bottom portion **103** of jump pack **100**, the quick-release attachment system and the quick release attachment area of the present invention is not limited to being incorporated into the bottom portion **103** of the jump pack **100**, but can be incorporated into any panel or portion of the jump pack **100**.

FIGS. **9-19** generally show various views of a first exemplary embodiment of a jump pack **100** and its constituent components being used in a static line jump configuration according to this invention. In a static line application, the jump pack **100** utilizes the harness attachment loops **110**, connection loops **112**, release loops **114**, the drop line attachment loop **116**, the leg straps **120**, the leg strap guides **105**, leg strap attachment segments **130**, and the single point release assembly **150** portions of the quick-release attachment system.

As shown in FIGS. **9-19**, when the jump pack **100** is to be used during a static line jump, the jump pack **100** is positioned upside down in front of the jumper and a first end of the drop line **160** is attached to the drop line attachment loop **116**. A second end of the drop line **160** is attached to the parachute harness **180**.

The jump pack **100** is lifted such that each harness attachment loop **110** can be aligned with and passed through an appropriate portion (D-ring) of the parachute harness **180**.

When the harness attachment loop **110** has been passed through the parachute harness **180**, the connection loop **112** is passed through the portion of the harness attachment loop **110** that protrudes through the parachute harness **180**.

When a connection loop **112** has been passed through the harness attachment loop **110**, the release loop **114** is passed through the portion of the connection loop **112** that protrudes through the harness attachment loop **110**.

The leg straps **120** are routed through an appropriate leg strap guide **109** and through the leg strap attachment segment coupler **138**. The leg straps **120** (and a leg strap attachment segments **130**) are routed between and around the jumper's legs.

Once the leg straps **120** are routed around the jumper's legs, each release loop **114** is positioned atop the quick release attachment area of the jump pack **100**, such that the release loop **114** can be aligned with and passed through the leg strap attachment segment aperture **132**.

When the release loop **114** has been passed through the leg strap attachment segment aperture **132**, an end of an appropriate first release line portion **154** or second release line portion **156** is passed through the portion of the release loop **114** that protrudes through the leg strap attachment segment aperture **132**. The release line portions **154** and **156** can then be passed further through the release loop **114** and through one or more optional release line guides **135** formed in or on the leg strap attachment segments **130**.

It should be understood that these steps are repeated as a leg strap **120** is positioned around each of the jumper's legs.

When the release line portions **154** and **156** have been routed through the release loops **114**, the handle portion **152** of the single point release assembly **150** can be releasably secured, via, for example, Velcro, to the quick release attachment area of the jump pack **100**.

Once the release line portions **154** and **156** are routed through the release loops **114**, as described above, the jump pack **100** is releasably secured to the jumper's parachute harness **180**, via the quick-release attachment system of the present invention.

It should be appreciated that the length of the leg straps **120** can be adjusted, via the leg strap attachment segment coupler **138** so that the jumper is able to achieve the best fit of the jump pack **100** to the parachute harness **180** and the jumper's body.

When the jumper jumps, as the jumper approaches the ground, the jump pack **100** can be released from the parachute harness **180** by the jumper pulling the handle portion **152** of the single point release assembly **150**, as shown in FIGS. **18** and **19**.

When the handle portion **152** is pulled a sufficient distance, the release line portions **154** and **156** are slidably withdrawn from the release loops **114**, allowing the release loops **114** to be freely withdrawn from the leg strap attachment segment apertures **132** and the connection loops **112**.

When the release loops **114** are withdrawn from the apertures and the connection loops **112**, the leg strap attachment segments **130** are released from the quick release attachment area of the jump pack **100** and the connection loops **112** can freely be withdrawn from the harness attachment loops **110**.

When a connection loops **112** are withdrawn from the harness attachment loops **110**, the harness attachment loops **110** can be freely withdrawn from the parachute harness **180** as the jump pack **100** can drop away from the jumper's body.

As the jump pack **100** drops away from the jumper's body, the drop line **160** is withdrawn from any jump line sheath or covering and is able to fully extend. When the drop line **160** reaches its full extension, the connection between the parachute harness **180** and the drop line attachment loop **116** of the jump pack **100** maintains a connection between the jump pack **100** and the parachute harness **180**, allowing the jump pack **100** to be suspended below the jumper.

When the jumper reaches the ground, the drop line **160** can be released from the drop line attachment loop **116**, the single point release assembly **150** can be stowed in the release assembly storage pocket **159**, and the flap **170** can be removed from the flap storage pocket **174** and secured, by the flap fastener **172**, so as to cover at least certain of the quick-release attachment system components on the quick release attachment area of the jump pack **100**. Each leg strap **120** can be

removed from its respective leg strap attachment segment coupler **138** and positioned within its respective leg strap pouch **122**.

FIGS. **20-24** generally show various views of a first exemplary embodiment of a jump pack **100** and its constituent components being used in a first freefall jump configuration according to this invention. In a freefall application, the jump pack **100** utilizes the harness attachment loops **110**, connection loops **112**, release loops **114**, the drop line attachment loop **116**, the shoulder straps **140**, the leg straps **120**, the leg strap guides **105**, the leg strap attachment segments **130**, and the single point release assembly **150** portions of the quick-release attachment system.

As shown in FIGS. **20-24**, when the jump pack **100** is to be used in the first exemplary freefall configuration, each of the leg straps **120** is routed through an appropriate quick release buckle **184**.

To don the jump pack **100**, the jump pack **100** may optionally be positioned upside down in front of the jumper and a first end of the drop line **160** is attached to the drop line attachment loop **116**. A second end of the drop line **160** is attached to the parachute harness **180**.

The jumper then steps into the shoulder straps **140** of the jump pack **100** and raises the jump pack **100** such that the quick release buckles **184** attached to the leg straps **120** can be buckled into an appropriate quick release harness **182** of the parachute harness **180**.

Once the quick release buckles **184** are buckled into the appropriate quick releases, the jump pack **100** is releasably secured to the jumper's parachute harness **180**, via the quick-release attachment system of the present invention.

It should be appreciated that the length of the shoulder straps **140** can be adjusted, via the lower adjustment device **144** so that the jumper is able to achieve the best fit of the jump pack **100** to the parachute harness **180** and the jumper's body.

When the jumper jumps, as the jumper approaches the ground, the jump pack **100** can be released from the parachute harness **180** by the jumper manipulating the quick release mechanisms and releasing the quick release buckles **184**.

When the quick release buckles **184** are released, the jump pack **100** can drop away from the jumper's body.

As the jump pack **100** drops away from the jumper's body, the drop line **160** is withdrawn from any jump line sheath or covering and is able to fully extend. When the drop line **160** reaches its full extension, the connection between the parachute harness **180** and the drop line attachment loop **116** of the jump pack **100** maintains a connection between the jump pack **100** and the parachute harness **180**, allowing the jump pack **100** to be suspended below the jumper.

When the jumper reaches the ground, the drop line **160** can be released from the drop line attachment loop **116** and the flap **170** can be removed from the flap storage pocket **174** and secured, by the flap fastener **172**, so as to cover at least certain of the quick-release attachment system components on the quick release attachment area of the jump pack **100**. Each leg strap **120** can be removed from its respective leg strap attachment segment coupler **138** and positioned within its respective leg strap pouch **122**.

FIGS. **25-27** generally show various views of a first exemplary embodiment of a jump pack **100** and its constituent components being used in a second freefall jump configuration according to this invention.

As shown in FIGS. **25-27**, when the jump pack **100** is to be used in a second exemplary freefall configuration, each of the leg straps **120** is routed through an appropriate quick release buckle **184**.

To don the jump pack **100**, the jump pack **100** may optionally be positioned upside down behind the jumper and a first end of the drop line **160** is attached to the drop line attachment loop **116**. A second end of the drop line **160** is attached to the parachute harness **180**.

The jumper then steps backwards, into the shoulder straps **140** of the jump pack **100** and raises the jump pack **100** such that the quick release buckles **184** attached to the leg straps **120** can be buckled into an appropriate quick release harness **182** of the parachute harness **180**.

Once the quick release buckles **184** are buckled into the appropriate quick releases, the jump pack **100** is releasably secured to the jumper's parachute harness **180**, via the quick-release attachment system of the present invention.

It should be appreciated that the length of the shoulder straps **140** can be adjusted, via the lower adjustment device **144** so that the jumper is able to achieve the best fit of the jump pack **100** to the parachute harness **180** and the jumper's body.

When the jumper jumps, the jump pack **100** is released in a manner similar to that described above, with respect to the first exemplary freefall configuration. However, it should be understood that in the first freefall configuration, the jump pack **100** is positioned substantially in front of the jumper, while in the second freefall configuration, the jump pack **100** is positioned substantially behind the jumper.

While the presently disclosed systems, methods, and/or apparatuses has been described in conjunction with the exemplary embodiments outlined above, the foregoing description of exemplary embodiments of the presently disclosed systems, methods, and/or apparatuses, as set forth above, are intended to be illustrative, not limiting and the fundamental disclosed systems, methods, and/or apparatuses should not be considered to be necessarily so constrained. It is evident that the presently disclosed systems, methods, and/or apparatuses is not limited to the particular variation set forth and many alternatives, adaptations modifications, and/or variations will be apparent to those skilled in the art.

Furthermore, where a range of values is provided, it is understood that every intervening value, between the upper and lower limit of that range and any other stated or intervening value in that stated range is encompassed within the presently disclosed systems, methods, and/or apparatuses. The upper and lower limits of these smaller ranges may independently be included in the smaller ranges and is also encompassed within the presently disclosed systems, methods, and/or apparatuses, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the presently disclosed systems, methods, and/or apparatuses.

It is to be understood that the phraseology of terminology employed herein is for the purpose of description and not of limitation. Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which the presently disclosed systems, methods, and/or apparatuses belongs.

In addition, it is contemplated that any optional feature of the inventive variations described herein may be set forth and claimed independently, or in combination with any one or more of the features described herein.

Accordingly, the foregoing description of exemplary embodiments will reveal the general nature of the presently disclosed systems, methods, and/or apparatuses, such that others may, by applying current knowledge, change, vary, modify, and/or adapt these exemplary, non-limiting embodiments for various applications without departing from the

spirit and scope of the presently disclosed systems, methods, and/or apparatuses and elements or methods similar or equivalent to those described herein can be used in practicing the presently disclosed systems, methods, and/or apparatuses. Any and all such changes, variations, modifications, and/or adaptations should and are intended to be comprehended within the meaning and range of equivalents of the disclosed exemplary embodiments and may be substituted without departing from the true spirit and scope of the presently disclosed systems, methods, and/or apparatuses.

Also, it is noted that as used herein and in the appended claims, the singular forms "a", "and", "said", and "the" include plural referents unless the context clearly dictates otherwise. Conversely, it is contemplated that the claims may be so-drafted to require singular elements or exclude any optional element indicated to be so here in the text or drawings. This statement is intended to serve as antecedent basis for use of such exclusive terminology as "solely", "only", and the like in connection with the recitation of claim elements or the use of a "negative" claim limitation.

What is claimed is:

1. A jumpable pack, comprising:

(a) a pack;

(b) a pair of harness attachment loops, wherein said harness attachment loops are secured, at spaced apart locations, directly to a portion of said pack;

(c) a pair of connection loops, wherein said connection loops are secured, at spaced apart locations, directly to a portion of said pack, such that each harness attachment loop interacts directly with a corresponding connection loop;

(d) a pair of release loops, wherein said release loops are secured, at spaced apart locations, directly to a portion of said pack, such that each release loop interacts directly with a corresponding connection loop, wherein each of said release loops is positioned so as to be at least partially disposed within a corresponding one of said connection loops, and wherein said corresponding one of said connection loops is positioned so as to be at least partially disposed within a corresponding one of said harness attachment loops;

(e) a drop line attachment loop, wherein said drop line attachment loop is secured directly to a portion of said pack;

(f) a pair of first straps releasably secured to a portion of said pack;

(g) a pair of second straps, wherein each second strap is secured to a side portion of said pack;

(h) a pair of second strap attachment segments, wherein each second strap attachment segment is releasably attached or coupled to each second strap; and

(i) a single point release assembly, wherein said single point release assembly includes a release line attached to a handle portion.

2. The jumpable pack of claim **1**, wherein said pair of harness attachment loops, said pair of connection loops, and said pair of release loops are secured to a bottom portion of said pack.

3. The jumpable pack of claim **1**, wherein said first straps comprise shoulder straps and include an upper adjustment device and a lower adjustment device.

4. The jumpable pack of claim **1**, wherein said second straps comprise leg straps.

5. The jumpable pack of claim **1**, wherein at least a portion of one of said harness attachment loops is releasably secured to a corresponding connection loop when at least a portion of said corresponding connection loop is passed through a portion of said harness attachment loop, at least a portion of said release loop is passed through a portion of said corresponding connection loop that extends through said harness attachment loop, and at least a portion of said release line is passed through a portion of said release loop that extends through said corresponding connection loop.

6. The jumpable pack of claim **1**, wherein at least one of said second strap attachment segments is releasably secured to one of said release loops when at least a portion of said corresponding connection loop is passed through a portion of said harness attachment loop, at least a portion of said release loop is passed through a portion of said corresponding connection loop that extends through said harness attachment loop and at least a portion of said release loop that extends through said corresponding connection loop is passed through an aperture formed proximate an end of said second strap attachment segment, and at least a portion of said release line is passed through a portion of said release loop that extends through said aperture of said second strap attachment segment.

7. The jumpable pack of claim **1**, further comprising a flap that can be secured over at least a portion of said pack to cover at least some of said harness attachment loops, said connection loops, said release loops, and said drop line attachment loop.

8. The jumpable pack of claim **7**, further comprising a flap storage pocket such that said flap can be stored within said flap storage pocket.

9. The jumpable pack of claim **1**, wherein said release line is attached to said handle portion between a first release line portion and a second release line portion.

10. The jumpable pack of claim **9**, wherein said release line is a single, continuous release line that extends from said first release line portion to said second release line portion.

11. The jumpable pack of claim **9**, wherein said first release line and said second release line are individual release lines attached to said handle portion.

12. The jumpable pack of claim **1**, wherein said release assembly is tethered, via a release assembly tether, to said pack.

13. The jumpable pack of claim **1**, further comprising a release assembly storage pocket formed in a portion of said pack such that said release assembly can be stored within said release assembly storage pocket.

14. A jumpable pack, comprising:

(a) a pack;

(b) a pair of harness attachment loops, wherein said harness attachment loops are secured, at spaced apart locations, directly to a portion of said pack;

(c) a pair of connection loops, wherein said connection loops are secured, at spaced apart locations, directly to a portion of said pack, such that each harness attachment loop interacts with a corresponding connection loop;

(d) a pair of release loops, wherein said release loops are secured, at spaced apart locations, directly to a portion of said pack, such that each release loop interacts with a corresponding connection loop, and wherein at least a portion of said corresponding connection loop is capable of being passed through a portion of said harness attachment loop, at least a portion of said release loop is capable of being passed through a portion of said corresponding connection loop that extends through said harness attachment loop, and at least a portion of said release line is capable of being passed through a portion of said release loop that extends through said corresponding connection loop to releasably secure at least a

portion of one of said harness attachment loops to a corresponding connection loop;

(e) a pair of first straps releasably secured to a portion of said pack;

(f) a pair of second straps, wherein each second strap is secured to a portion of said pack;

(g) a pair of second strap attachment segments, wherein each second strap attachment segment is releasably attached or coupled to each second strap; and

(h) a single point release assembly, wherein said single point release assembly includes a release line attached to a handle portion.

15. The jumpable pack of claim **14**, wherein said pair of harness attachment loops, said pair of connection loops, and said pair of release loops are secured to a bottom portion of said pack.

16. The jumpable pack of claim **14**, wherein said first straps comprise shoulder straps and include an upper adjustment device and a lower adjustment device.

17. The jumpable pack of claim **14**, wherein at least a portion of said corresponding connection loop is capable of being passed through a portion of said harness attachment loop, at least a portion of said release loop is capable of being passed through a portion of said corresponding connection loop that extends through said harness attachment loop and at least a portion of said release loop that extends through said corresponding connection loop is capable of being passed through an aperture formed proximate an end of said second strap attachment segment, and at least a portion of said release line is capable of being passed through a portion of said release loop that extends through said aperture of said second strap attachment segment to releasably secure at least one of said second strap attachment segments to one of said release loops.

18. The jumpable pack of claim **14**, further comprising a flap that can be secured over at least a portion of said pack to cover at least some of said harness attachment loops, said connection loops, said release loops, and said drop line attachment loop.

19. The jumpable pack of claim **14**, wherein said release line is attached to said handle portion between a first release line portion and a second release line portion.

20. The jumpable pack of claim **19**, wherein said first release line and said second release line are individual release lines attached to said handle portion.

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